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GEOMETRY IN BABILONIA

Our first knowledge about mathematics comes from the Egyptians and Babylonians. Both of them didn't regard geometry as a separate branch of mathematics. However, we have a few extant examples of ancient geometry, mostly calculations of area and volume [1].

So, Babylonians could calculate areas and volumes of figures (like cube, parallelogram, prism, cylinder and others); they were the first who divided the circle into 360 degrees, minutes, seconds; they found the most accurate meaning of the number π ($25/8 = 3,125$), etc.

In this article we would like to analyze five Babylonian tablets which all have some connections with Pythagorean theorem [3]: *Susa tablet*, *Yale tablet YBC 7289*, *Plimpton 322*, *Tell Dhibayi tablet* and *tablet from the British Museum*.

A translation of a Babylonian tablet which is preserved in the British museum goes as follows:

4 is the length and 5 is the diagonal. What is the breadth?

Its size is not known.

4 times 4 is 16. 5 times 5 is 25.

You take 16 from 25 and there remains 9.

How many times and what number shall I take in order to get 9?

3 times 3 is 9. 3 is the breadth.

Plimpton 322 [2] concerns the Pythagorean triples. The smallest Pythagorean triple which appears is 45, 60, 75. You don't find there such Pythagorean triples that we know from school: 3, 4, 5 and 5, 12, 13.

On *Yale tablet* you can find calculations of $\sqrt{2}$ with the help of the square with the side 30.

Tell Dhibayi tablet describes the problem on the lengths of the sides of the rectangle when the area and diagonal are known.

Susa tablet has the rule that can help you to find the radius of the circle that tangents to the vertices of an isosceles triangle. Sides of this triangle are 50, 50, 60 and to solve this problem they use the Pythagorean theorem.

On another tablet from Babylonia you can find such a problem and a solution:

60 is the Circumference, 2 is the perpendicular, find the chord.

Double 2 and get 4.

Take 4 from 20 then you get 16.

Square 16, then you get 256.

Take 256 from 400 then you get 144.

Whence the square root of 144, 12 is the chord.

Other tablets include the following [1]:

- practical way of measuring the area of land in Ummi (Mesopotamia);
- geometric problem of finding areas such as the square of a given size is divided into different shapes and you should find areas of these parts;
- volume of truncated pyramid;
- geometric problems with pictures of trapezoids and triangles;
- calculating the diameter of the circle and others.

From the above mentioned we can say that the Babylonians were very knowledgeable in geometry. Although they did not use certain formulas, but they were able to formulate practical rules, that allowed them to solve problems.

LITERATURE

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